



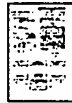
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Patent Plaques



# JP11177134A2: MANUFACTURE OF SEMICONDUCTOR ELEMENT, SEMICONDUCTOR, MANUFACTURE OF LIGHT EMITTING ELEMENT, AND LIGHT EMITTING ELEMENT

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Issued/Filed Dates: July 2, 1999 / Dec. 15, 1997

Application Number: JP1997000343524

IPC Class: H01L 33/00; H01L 21/28; H01S 3/18;

**Abstract:** **Problem to be solved:** To simplify a complicated process by removing hydrogen immediately below an electrode by performing annealing after an electrode is formed, by forming the electrode as a hydrogen permeating electrode by using Pd and obtaining a good ohmic contact between a metal and a semiconductor by forming an electrode on the cleans surface of GaN which has not been subjected to any high-temperature process, and then, by reducing the number of performing times of high-temperature processes in an element manufacturing process to one time.

**Solution:** After an Si-doped n-type GaN layer 102 is formed to a thickness of 4  $\mu\text{m}$  on a C-face of a sapphire substrate 101 by using an MOCVD device, a GaN film 103 doped with Mg to an impurity concentration of about  $1 \times 10^{20} \text{ cm}^{-3}$  is grown on the layer 102 to a thickness of 1  $\mu\text{m}$ . Then a Pd electrode 104 which is a hydrogen permeating electrode is formed to a thickness between 40  $\text{\AA}$  and 1  $\mu\text{m}$  on the clean surface of a nitride gallium semiconductor before the semiconductor is subjected to annealing which is performed for changing the polarity of the semiconductor to the p-type. Then the semiconductor is annealed for 10-minutes at 700°C in an inert gas atmosphere of nitrogen, argon, etc.

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Other Abstract Info: CHEMABS 131(07)094628J CHEMABS 131(07)094628J DERABS C1999-436034 DFRABS C1999-436034

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